THE Soybean Digest

NEW REASONS FOR INOCULATION
1944 PLANTING INTENTIONS
POSTWAR SOY PAINTS

Official Publication
OF
THE AMERICAN SOYBEAN ASSOCIATION

VOLUME 4 • NUMBER 6 APRIL • 1944

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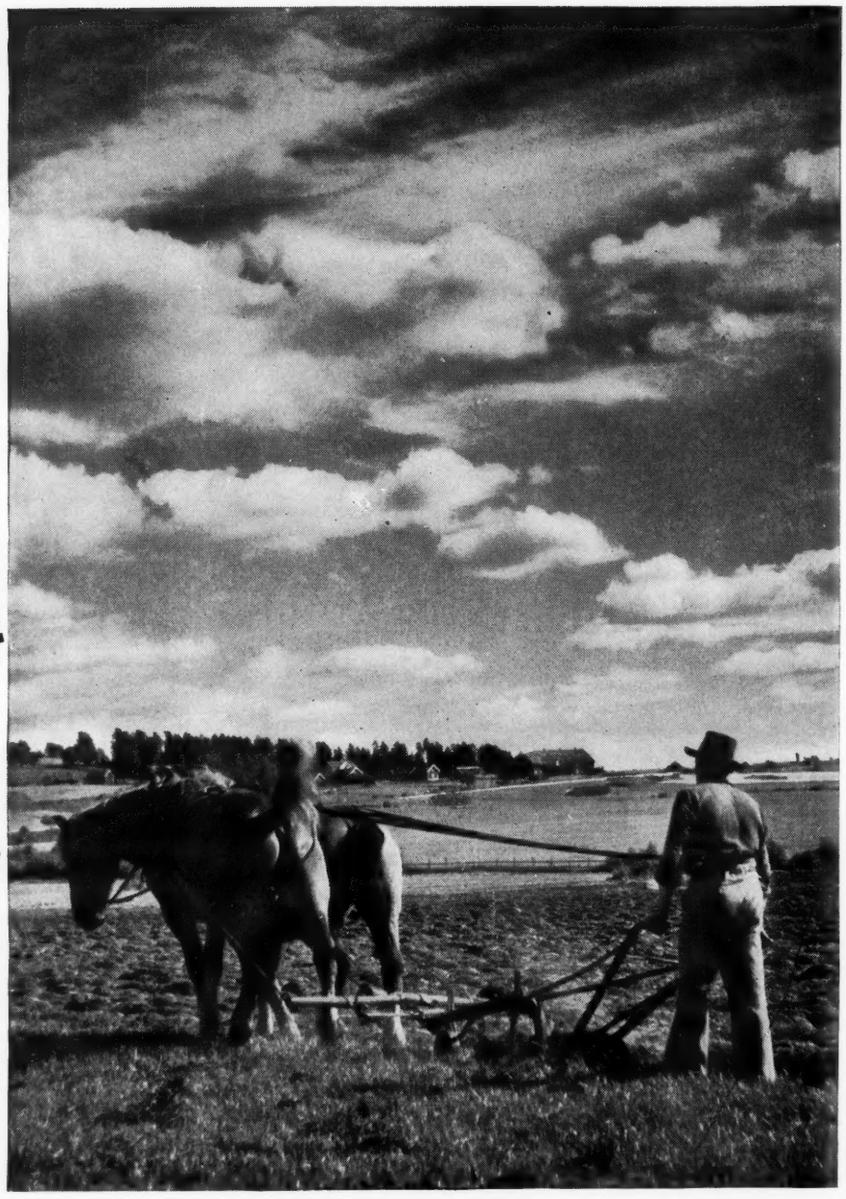

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THE *Soybean Digest*

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Publishers' Representatives: Ewing-Hutchinson Co., Chicago

Vol. 4 APRIL ☆ 1944 No. 6

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Let's Plant the Acreage

The next few weeks will tell the story.

Soybean planting season is almost here. A matter of weeks will determine whether or not the all-important national soybean goals are met.

As of today, indications are that they will not be met. Latest reports from AAA are more encouraging than the March 20 survey of intentions to plant, but still well below the more than 13 million acres of soybeans for harvest asked by the U. S. Department of Agriculture.

Reasons for this apparent failure to meet the increased soybean goal are many and complicated, but chief is probably the dissatisfaction of growers in leading soybean states with WFA's support price, which is unfavorable as compared to prices brought by other crops competing for the same land. Other factors are irritation over the handling of the feed program, inclination of farmers to grow crops that can be fed on the farm, the growing farm labor shortage, uncertainty as to future draft policies, the feeling by some that soybeans are "hard" on the soil, the severe 1943 drought in some areas, and the cutting of acreage on the western edge of the soybean belt, where expansion had been rapid the past few years.

WFA is apparently standing pat on the $2.04 support price. But a priority on oil meal to bean growers, which would give them an inside track in procuring this scarce commodity, may serve as an inducement to put in some extra acres.

Yet the importance of meeting the soybean goals cannot be gainsaid. The need for fats and oils remains acute. The Bureau of Agricultural Economics is predicting a probable decrease in the supply of fats and oils in the United States in 1945. No other oilseed crop can take the place of soybeans over a very wide area, and no other is so versatile in its uses. Soybeans are in a key position in the whole food for freedom program. No farmer can lightly decide to cut his acreage this spring.

If he can see his way clear to increase acreage despite the feeling that he is somewhat the goat in the present situation, he will deserve an award for real patriotism.

Freedom From Want

The four freedoms (or however many there are) will remain a noble ideal until hard-headed practical people succeed in implementing them into everyday life. The chemurgists were very busy in demonstrating how it could be done at their 10th annual conference which closed in St. Louis March 31.

Such products as the new rayons, plywoods, soybean fibres and soybean oil paints will in the future play their part in making this a better fed, better clothed and better housed world.

That chemurgy will not remain a narrowly national movement but is worldwide in scope was well demonstrated by the session, "Chemurgy Throughout the World," which included a number of speakers from foreign lands. The possibilities of the chemurgic approach in solving the problems of "have not" regions, which are becoming increasingly our problems whether we like it or not, were pointed out graphically by Ezra Levin of the VioBin Corp., in his talk on new protein flours. The masses of India, said Mr. Levin, are starving for proteins and oils, yet they live next door to Ceylon, which grows one-third of the world's coconuts, a good source of both protein and oil.

What is needed, in Mr. Levin's opinion, is processing mills in those regions to process from the coconut foods which are both nutritious and of high keeping quality. This would give an unimaginable boost to the nutritional level.

Perhaps there is a thought here for soybeaners who are haunted by the spectre of competition with foreign oils after the war. If these crops are used first to feed the native populations, as they should be, there will not be so much of them to ship into the United States.

No, It's Not "Oleomargarine"

Margarine forces have again taken up the battle to correct some of the more inequitable features of federal margarine legislation. Senator Ellison D. Smith has referred a bill, which he calls, "The Margarine Act of 1944," to the senate committee on agriculture and forestry.

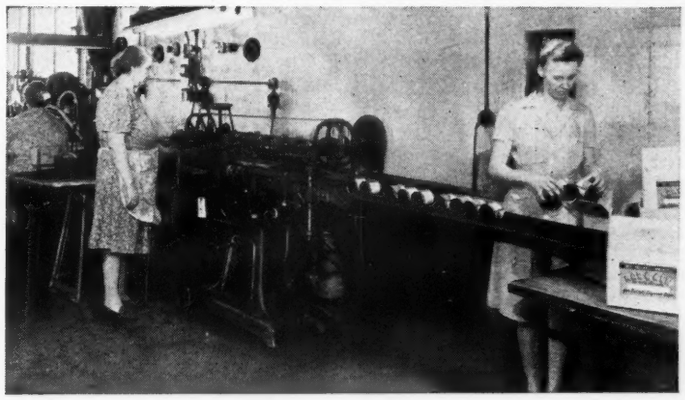
The Smith bill would retain part of the existing federal excise levies, but would remove the chief discriminatory taxes applicable to the colored product. The $600 manufacturer's tax would be retained, but not the tax on wholesalers and retailers.

Incidentally, the Smith bill would allow manufacturers to label their product "margarine" instead of "oleomargarine," if they so preferred. The term "oleo" pertains to animal fat. Most margarine is now made from vegetable oils, so the term misnames rather than identifies the product.

There is no excuse for a legal requirement that a product made from soybean oil be labeled "oleomargarine."

Published on the 15th of each month at Hudson, Iowa, by the American Soybean Association. Entered as second class matter November 20, 1940, at the postoffice at Hudson, Iowa, under the Act of March 3, 1879. Forms close on 5th of month. Subscription price to association members, $1.00 per year; to non-members, $1.50 per year.

EVERY POUND *of Soybean Seed* SHOULD *be* INOCULATED



Fixo Says:

Here's why. When properly inoculated, soybeans get necessary nitrogen from the air. Uninoculated beans must get all of their nitrogen from the soil . . . . are "soil robbers." Inoculation increases the yield many bushels per acre and increases the protein content. Even though beans have been grown before, it is best to inoculate every planting . . . . especially when it costs only a few cents per acre. . The U.S.D.A., the A.A.A. and other farm authorities are urging that every pound of soybean seed be inoculated.

The above picture shows the Nod-O-Gen cans rolling through the labeling machine . . . . being packed for shipment . . . . one of numerous, carefully supervised, and inspected operations in an up-to-the-minute scientific plant.

The Nod-O-Gen cans are rolling in larger quantities than ever . . . . each year larger than the preceding . . . . evidence of satisfaction to growers and profits to dealers.

Farm Laboratory Division

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POSTWAR PAINTS

● *From an Address before the 10th Annual Chemurgic Conference at St. Louis. Mr. Taggart Says Soybean Oil Will Be Used in Postwar House Paints to Give Them Long Life and Brilliance of Color. He Demonstrated a Number of Panels to Prove His Point. Two Are Reproduced Below.*

By M. F. TAGGART
Director of Research, O'Brien Varnish Co.

BEFORE we wrestle with the more technical aspects of "Paints for Postwar Homes," we might well look over our chemurgic shoulder to recall the plea made in 1935 that more American grown oils be used in paints. Many of you recall the acrimonious discussions thereabout; sometimes the sparks flew and the air was blue with the pro's and con's thereon.

After nine years of intensive research, and literally hundreds of turbulent dreams and sad awakenings, we can correctly answer the question most probably upon your minds right now. "What about paints for postwar homes?" "Will we have something new, better, cheaper?" "Will plastics enter the picture?" "Will Chemurgy influence the project?" Answering the last question first, I will say that Chemurgy has already cast the die. Chemurgy did cast it back in 1935 when the chemists were beseeched to get going, to do something about it.

Postwar homes will be the same homes as the antebellum homes; the same conditions will exist with respect to humidification, air conditioning, insulation, etc., but all of these things will be more pertinent.

Let us clear up the picture of why we paint. Sure, "Save the Surface and You Save All," is a slogan familiar to us all, but, get me straight, I say that 95 percent of all urban painting will be done to make our houses look pretty. Not especially to protect the house. Interiorly, we will paint to beautify, or to provide certain film characteristics much desired with respect to washability or vapor sealing in conjunction with or as an aid to air conditioning. I will dwell upon just the exterior surfaces and even confine that bit to the subject of what you understand as white exterior house paint.

Successful research is not a flash in the pan, here today and gone tomorrow, but more nearly approaches that long sought perpetual motion. It goes on and on. Paints for postwar homes, to be safe and correct, must be predicated upon the research developments of the years gone by, brought up to date constantly by meticulous hewing to the line of truth, letting the chips burn where they light.

Before you is exhibited a series of panels showing exposure tests made upon various and sundry house paints. All of these paints have been exposed to the weather at an angle of 45° to the south in the latitude of northern Indiana, the exposure having been for three years. Should any of you people paint your present or postwar houses with any of the paints here exhibited, you can satisfy your own curiosity now, in advance, of what will, in all probability, happen to the paint film on the south side of your house three years after painting.

HORSE AND BUGGY DAYS

All of the paints, here, were the very highest grade paints offered by the several manufacturers represented. All were readily available in St. Louis, and probably your home town, at the time the exposure was begun. These paints show clearly the extent of progress or quality in paint research, as existing in the laboratories of the individual manufacturers.

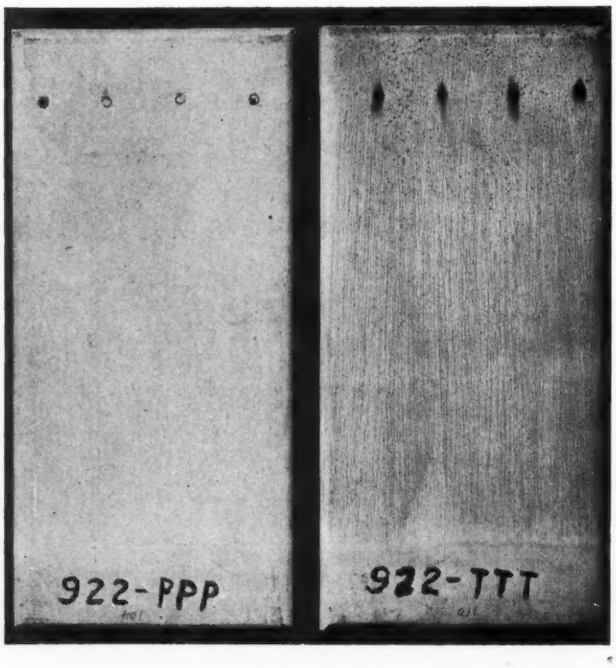
In the horse and buggy days of house paints, we were obliged to use paint mixed on the job, which was composed of white lead poorly mixed, by hand, in raw linseed oil, to which some varying amount of an unknown drier was added. In a few weeks or months, generally cracking of the film resulted and forever after, we had unsightliness, but it was the only thing available. That kind of paint is still available to you people today.

We can run the gamut of these panels rapidly and you can readily get into the meat course of this diet of paints. For your information, most all of these paints have been formulated with all of the attention having been given to the pigmentation or coloring matter, seldom has there been any thought given to the liquid or oil constituent. It seemed sufficient to grind a little of this and a lot of that into raw linseed oil and let it go at that, hoping that some miracle would be performed.

The day of miracles is over.

Chemurgic pressure prompted a most extensive research program which delved into the hidden corners of paint formulation until, now, your postwar house may be painted to exteriorly match in whiteness and more pleasing beauty the modern refrigerator or range in milady's kitchen.

While we have that beautiful white re-



Panel on right is standard, top-grade linseed oil house paint. Note cracks in brush furrows. Panel on left is a paint made with soy oil. Both panels were exposed side by side at a 45 degree angle to the south.

frigerator in mind, possibly you people would be interested in knowing what makes it so white, so durable, so distinctly attractive. If you will pardon my pure chemistry for just a few words, let me advise you that the modern refrigerator is finished with a baked enamel made out of white pigments ground in a liquid, which liquid is the reaction product resulting from chemically combining a polyhydroxyl alcohol, a polybasic acid, and a carboxylic acid. I said polyhydroxyl alcohol which, to you, might mean ordinary glycerin such as you use in hand lotion; I said polybasic acid, and mean phthalic anhydride which, to you, might better mean oxidized moth balls; then I said carboxylic acid which can be actually, the acid of soybean oil. Let us relax now from such a parade of polysyllabic words and let our hair down, understanding that the modern refrigerator is finished with glycerin, moth balls and soybeans. Why soybeans? Because soybean oil is so stable, non-yellowing, flexible and reacts well.

To paraphrase the words, so loved by lawyers, Whereas soybean oil is admittedly tops for non-yellowing when used as a finish for refrigerators, and Whereas soybean oil can be made to dry satisfactorily, Be it resolved that soybean oil ought to be used in large quantities in paints for postwar homes.

The series of panels shows what can be done with soybean oil in paints for postwar homes if chemists really want to get in there and pitch. There is not a thing about the formulation of these better paints which might be considered as trade secrets or even artful. Just common sense research will lead any paint chemist to a very definite choice of pigmentation or coloring matter, and that combination will come very close to being:

Titanium dioxide for opacity,
Zinc oxide for brilliant whiteness,
White lead for drying,
Asbestine for tooth,
Other inerts to control brushing.

So much for one side.

The same fundamental research will lead to a choice of oils as follows:

Soybean oil for long life and brilliance of color, also non-yellowing and continued flexibility along with good ease of application.

A jelling oil for controlled penetration.

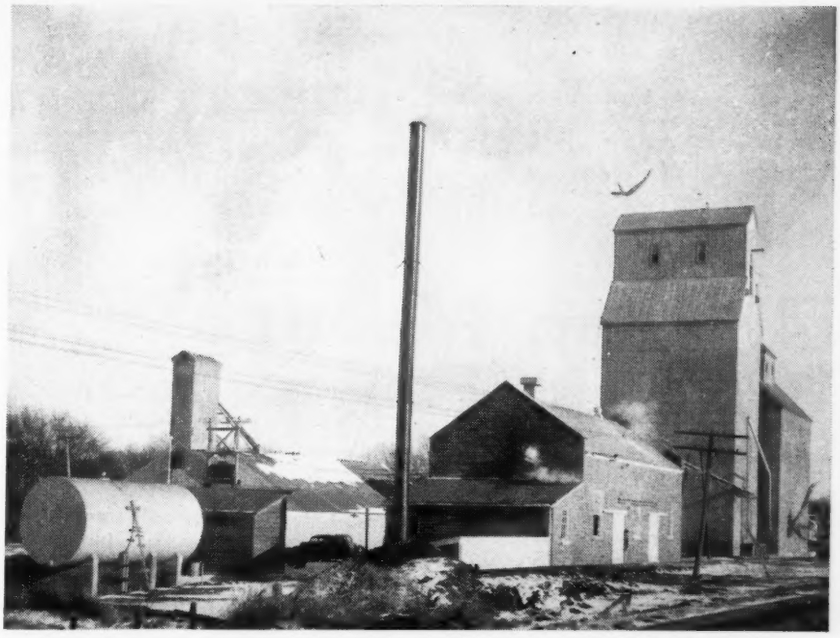
That is exactly the composition of the paint on this panel (922-PPP in illustration). Other panels closely approaching this one are representative of what happens when very small deviations are made in the optimum formula, in the constant attempt to effect that last bit of improvement.

—s b d—

SMOTHER CROP

Soybeans, in addition to providing feed, protein and oil supplies, are effective as a smother crop on such noxious perennial weeds as Canada thistle, quack grass or bindweed. More than 1 year is usually required for eradication, but no crops are lost in the process. E. P. Sylvester, extension botanist at Iowa State College, says low-producing areas or those abandoned because of serious weed infestations can be brought into production by growing soybeans to kill the weeds. Soybean growth will leave the land in better condition at the end of the war emergency.

Co-op Processing Mill



— Des Moines Register Photo

This farmer-owned soybean processing plant at Ralston, Iowa, is one of eight such plants in the state, and is owned by 481 Carroll and Greene County farmers. Karl Nolin is the manager. Capacity is 300,000 bushels annually.

FARMERS SUGGEST CHANGED

Grade Regulations

General dissatisfaction among farmers regarding 1943 soybean grade regulations, lack of compensation for storage and a growing feeling that WFA's proposed support price would not secure the soybean acreage necessary for the war effort crystalized at the fifth annual Soybean Town Meeting held February 15, at Van Wert, Ohio.

The meeting, sponsored by the soybean committee of the Van Wert Seed Improvement Association, was attended by several hundred farmers raising soybeans in western Ohio and eastern Indiana.

A resolutions committee of farmers was appointed to convey the wishes of the group in attendance. The following resolutions were prepared by the committee as representing the consensus of opinion of the meeting:

WHEREAS, the 1943 soybean grading system was unfair, caused hardship and misunderstanding among farmers, handlers, and processors; be it resolved that the support price be paid for No. 2 yellow soybeans containing 14 percent moisture, with single factor discounts and premiums for soybeans of lower and higher quality as follows:

Test Weight — ½c discount for each pound or fraction thereof, under fifty-four pounds.

Moisture — 1½c discount for each ½% or fraction thereof, over 14%. 2c premium for each full 1% below 14%, down to 11%.

Splits — ¼c discount for each 5% or fraction thereof, of splits over 15%.

Damaged Beans — Other than green beans. ½c discount for each 1%, or fraction thereof, in excess of 3% total damage, up to 25%. 1c discount for each 1%, or fraction thereof, in excess of 25% up to 60%. 1½c discount for each 1% or fraction thereof, over 60%.

Green Damage — 1c discount for each 5%, or fraction thereof, over total damage of 3%.

Dockage — Dockage to be deducted from weight, provided that no dockage shall be assessed unless the total of dockage amounts to 1%.

Other Classes — The above price shall apply to yellow and green beans. The price of brown, black, or mixed beans is 20c per bushel less.

WHEREAS, the Government has requested farmers to store soybeans on the farm, and no practical price differential has been adopted to compensate or encourage the farmers to store the soybeans; be it resolved that the following price schedule be adopted. It will favor farm storage.

Schedule

Base Price ($1.94) on No. 2 Soybeans to December 31, 1944

Add 5c ($1.99) on No. 2 Soybeans Jan. 1 to Jan. 31, 1945

Add 1c ($2.00) on No. 2 Soybeans Feb. 1 to Feb. 28, 1945

Add 1c ($2.01) on No. 2 Soybeans March 1 to March 31, 1945

Add 1c ($2.02) on No. 2 Soybeans after April 1, 1945

(Editor's Note: These resolutions were

adopted before WFA's support price of $2.04 was announced.)

WHEREAS, the present price relationship between corn and soybean does not favor and will not secure the desired bean acreage for the war effort; be it resolved that the ratio between the price of corn and the price of soybeans be set on the basis of 1 to 2.

WHEREAS, the "soybean grower-livestock feeder" has experienced difficulty in securing the rightful share of soybean oil meal; be it resolved that the "soybean grower-livestock feeder" be given a priority on soybean oil meal. This will stimulate the growing of soybeans, and discourage the grinding of whole soybeans as a source of protein for livestock feed.

Respectfully submitted,

Resolution Committee: Burton R. Hoaglin, Chairman; W. G. Weigle, Rei Duprey, E. Hargesheimer, R. S. Oetzel.

L. A. GILLILAND, Chairman
Van Wert County Soybean Committee

Chicago Meeting

• WITH COMMODITY CREDIT CORPORATION

A special committee's recommendations for revision of Commodity Credit Corporation's 1944 soybean purchase program have been filed with Commodity.

The report of the committee was made at a CCC hearing in Chicago March 28 on the proposed 1944 marketing program. Those in attendance at the hearing included country and terminal elevator men, soybean processors, AAA representatives and college men. Soybean growers as such were not represented.

Members serving on the committee in behalf of the farmers and farmers' elevators were Prof. J. C. Hackleman, University of Illinois College of Agriculture, Urbana, chairman; G. H. Iftner, director of grain marketing for the Illinois Agricultural Association, Chicago; and A. E. Burwash, vice-president of the Illinois Grain Corporation, Champaign.

The new program will disregard grades as such and will provide a definite scale of discounts in cents per bushel for each variation of grading factor, according to reports. The official CCC program will be announced later.

Following are some suggested discounts and comments which were made at the meeting:

TEST WEIGHT

One-half cent per bushel for each full pound under 54 pounds.

Comment: AAA men raised the question whether weight per bushel had anything to do with the yield of oil and meal. Processors felt the lower the test weight, the more their grinding capacity was reduced.

MOISTURE

Suggested schedule: 1½ cents per bushel for *each full* ½ percent of moisture in excess of 14 percent moisture.

Comment: Country elevators felt this discount was very acceptable to them and relieved them of many of the inequalities that occurred in the 1943 contract.

AAA men appeared quite satisfied with the new suggestion and preferred it to the 1943 discounts.

Processors felt that the discount should read: 1½ cents per bushed for *each fraction* of ½ percent moisture in excess of 14 percent; and suggested that over 18 percent the discount should read 2 cents a bushel for each fraction of ½ percent moisture.

During the discussions on moisture, many AAA men voiced the opinion that the premiums paid for moisture should not stop at 11 percent but should continue for each 1 percent under this level. This was strongly opposed by both country elevators and processors, the former feeling that so far as their operation was concerned, it was entirely unworkable.

The processors strongly opposed this suggestion as it eliminated practically the only concession they had that might balance many of the other inequalities.

SPLITS

One-fourth cent per bushel for each full 5 percent in excess of 15 percent.

Comment: These discounts appeared agreeable to all concerned.

DAMAGE — OTHER THAN GREEN DAMAGE

One-half cent per bushel for each full 1 percent in excess of 3 percent, but not in excess of 25 percent. One cent per bushel for each full 1 percent in excess of 25 percent, but not in excess of 60 percent. One and one-half cents per bushel for each full 1 percent in excess of 60 percent. When soybeans contain total damage in excess of 3 percent, the first 3 percent of the total damage shall be considered to be damage other than green damage.

Comment: AAA men and country elevators appeared satisfied with this schedule of discounts. Some processors were of the opinion that over 25 percent damage should be bought at buyer's value and not on a schedule of discounts.

GREEN DAMAGE

One cent per bushel for each full 5 percent of green damage in excess of 3 percent total damage.

Comment: All parties seemed agreeable to the discounts as written.

DOCKAGE AND FOREIGN MATERIAL

The net number of bushels shall be determined on the basis of 60 pounds of soybeans free of dockage and foreign material in excess of 2 percent. Only full percentages will be considered for discount purposes.

Comment: AAA men and country elevators accepted the discounts as suggested. Processors objected strongly, pointing out that as the schedule discount was written, both growers and country elevators would be in a position to deliver soybeans to them containing 2.9 percent dockage and foreign material which had little or no value. If this should happen, the net loss to the processors would be 4¼ cents per bushel.

Dockage and foreign material discounts in the 1943 crop allowed the same tolerances as the 1943 crop. Processors did, however, point out that they had prerequisites in splits and moisture discounts that over a period of time tended to balance out the losses by gain. The general opinion of most processors seemed to be that, if the suggested schedule of discounts were adopted, the grinding charges allowed them under a CCC contract would have to be increased from 3 to 4 cents a bushel.

—s b d—

— U.S.D.A. Photo by Purdy

DR. SKINNER HAS RETIRED

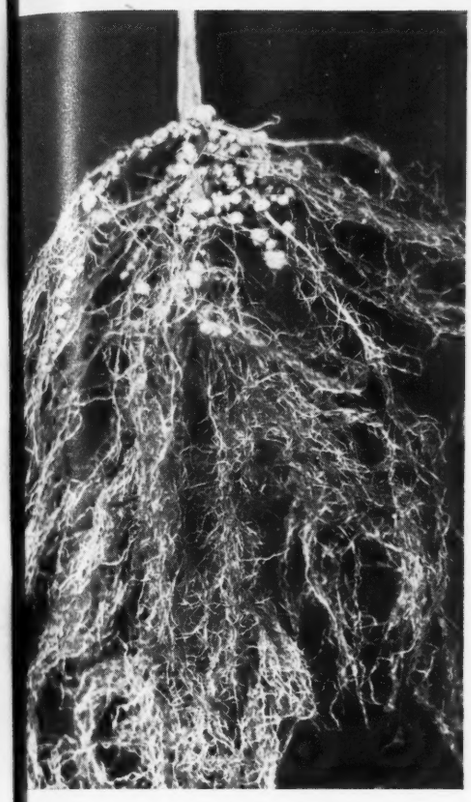
Dr. W. W. Skinner, chief of the Department of Agriculture's Bureau of Agricultural and Industrial Chemistry, retired March 31 after 40 years in the federal service.

Dr. Orville E. May, who organized the Northern Regional Research Laboratory at Peoria, Ill., and directed it until 1942, has been appointed by Secretary of Agriculture Wickard to succeed Dr. Skinner as chief of the Bureau.

Long an advocate of research in the industrial utilization of farm products and by-products, Dr. Skinner played an active part in establishing the Department's four Regional Research Laboratories as well as other laboratories in which the industrial and food uses of farm products are studied. He had the satisfaction of seeing this type of research, carried out on a pilot-plant or semi-commercial scale — which he also advocated — amply justified by its notable contributions to the wartime needs of the United States.

Dr. Skinner joined the staff of the Department of Agriculture's Bureau of Chemistry in 1904 to assist Dr. Harvey W. Wiley in organizing the "pure food" work. When two bureaus were combined in 1927 to form the Bureau of Chemistry and Soils under the late Dr. Henry G. Knight, Dr. Skinner served as assistant chief of the chemistry unit. In 1942, following Dr. Knight's death, Dr. Skinner succeeded him as chief.

During his long service with the bureau Dr. Skinner has worked at different times in a dozen special fields of chemistry in relation to agriculture and has been the author or co-author of some 250 scientific papers, reports, and addresses.



Three More Reasons for Soybean

Inoculation

• Proper inoculation is not merely a matter of there being plenty of nitrogen-fixing bacteria in the soil. Professor Umbreit points out that there are "good," "fair," and "poor" bacteria. He gives several new reasons why soybean growers should inocualte.

By W. W. UMBREIT

Department of Agricultural Bacteriology, University of Wisconsin

SOYBEAN inoculation has been a necessary and exceedingly profitable practice since the introduction of the soybean into the Americas. Yet, aside from the mere mechanics of inoculation, few growers realize just what is being done in the process. It is the purpose of this article to explain the why's and wherefore's of soybean inoculation; in short, to describe how the grower can use it to best advantage.

Inoculation consists of putting a particular kind of bacteria on the soybean seed. Bacteria are exceedingly small living organisms. They are so tiny that they only have one cell and a very minute one at that. But the important thing is that they are alive and must be treated as living beings. They are not an "inert" chemical, like fertilizers; they are even less hardy than seeds, and of the many kinds of bacteria which exist, the kind which is valuable to the soybean is one of the more sensitive.

SMALL BUT NOT INSIGNIFICANT

One would think that because they are so small they would therefore be insignificant, but they make up for their small size by large numbers and great activity. One would also think that because they are so small (they can be seen as individuals only with the highest power microscopes) very little could be found out about them. But that is not the case. By means of a variety of ingenious methods they can be obtained in "pure culture" (a group of bacteria all of the same kind) and these cultures have been studied extensively. Of course, such studies are somewhat limited since special equipment and materials are necessary, but the practical significance of what has been found out is great.

The "soybean bacteria" (technical name *Rhizobium japonicum*), when conditions are right, can enter into the roots of the soybean plant (they go in through the root hairs), can grow inside of the roots causing a swelling (called a "nodule") and most of the time this nodule is capable of supplying the soybean with all of the nitrogen it needs. This it does by a process called "nitrogen fixation" in which the nitrogen gas of the air (80 percent of the air is nitrogen) is somehow converted into nitrogen compounds which the plant can use. This process makes the soybean an exceedingly valuable plant since it can obtain its protein (which is mostly nitrogen) from the air and does not need to rob the soil of this essential element which is scarce and expensive.

Furthermore, the soybean, under these conditions, is not only high in protein itself but even adds nitrogen to the soil for other crops to use later. Great effort has been expended to find the best way of utilizing this very valuable attribute of the soybean bacteria and the result has been the practice of inoculation.

To be sure, the soybean bacteria can exist in the soil in which soybeans have been grown and one would think that once one had inoculated a field of soybeans and obtained a good crop, there would be no further need for inoculation because the bacteria were now in the soil for any future crop. In some cases this is doubtless true, but many studies have shown that in a high proportion of cases one can obtain marked benefits from inoculation even if there are plenty of bacteria in the soil from preceding crops.

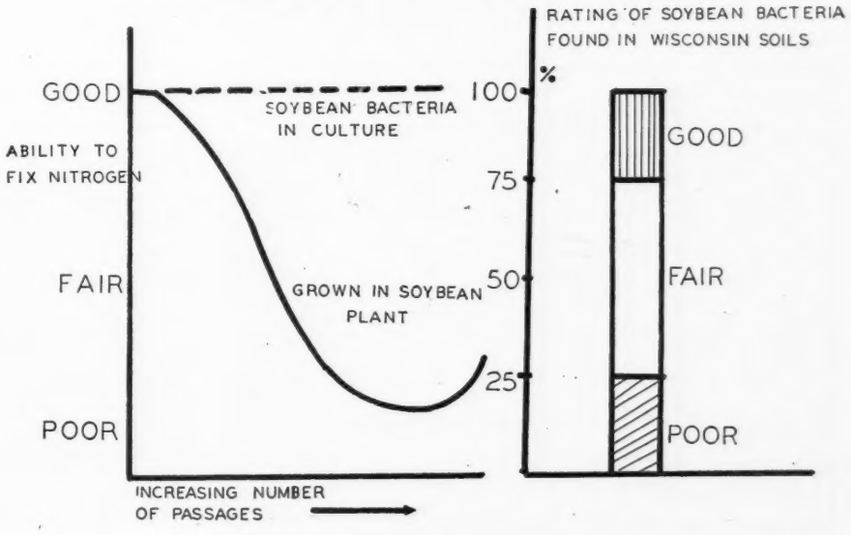
As we have said, the soybean bacteria are small and delicate, and it takes a great many to do the job we want done. Under most conditions not enough survive the course of two or three years in the soil (they cannot live in the roots of other plants, even other legumes) to give the best inoculation. One actually never knows whether the bacteria have remained alive in sufficient numbers to do a good job until the crop is grown, when, of course, it is too late to remedy the situation. The solution of the difficulty has been to place active bacteria in large numbers on the seed at planting; in short, to inoculate. Particularly on slightly acid or acid soils, inoculation is vital, since the bacteria in such soils do not survive in large numbers for very long.

PLANT PASSAGE

Perhaps even more important, it is possible to obtain benefit from inoculation when there are plenty of bacteria in the soil. Part of the benefit is probably due to placing the bacteria right on the seed so that they are there when the seed germinates and the seedling starts to grow. One can expect much earlier nodulation and a longer period for nitrogen fixation.

But another important benefit has been recognized only recently. About ten years ago Allen and Baldwin reported experiments which tended to explain what practical growers had been reporting for some time, i. e. that there was a response to inoculation even when there were plenty of bacteria in the soil. Allen and Baldwin studied "plant passage." This consisted of inoculating soybean plants with a pure culture of soybean bacteria, allowing nodules to form and using the bacteria from these nodules to inoculate another soybeans, etc. That is, the bacteria were kept alive by growing them in the plants themselves, com-

The ability of soybean bacteria to supply nitrogen. Left, the same bacteria after several plant passages. Right, bacteria found in Wisconsn soils.



parable to what happens when one relies upon the bacteria applied in a previous growth of soybeans to inoculate the new crop.

It was found that bacteria which could fix large quantities of nitrogen ("good" cultures) gradually deteriorated during such plant passage ("poor" cultures increased in ability to fix nitrogen). Since the soybean bacteria in the soil are a mixture derived from one, two or more such "passages" one would expect that their ability to fix nitrogen to be somewhat harmed by this treatment.

SURVEYS OF BACTERIA

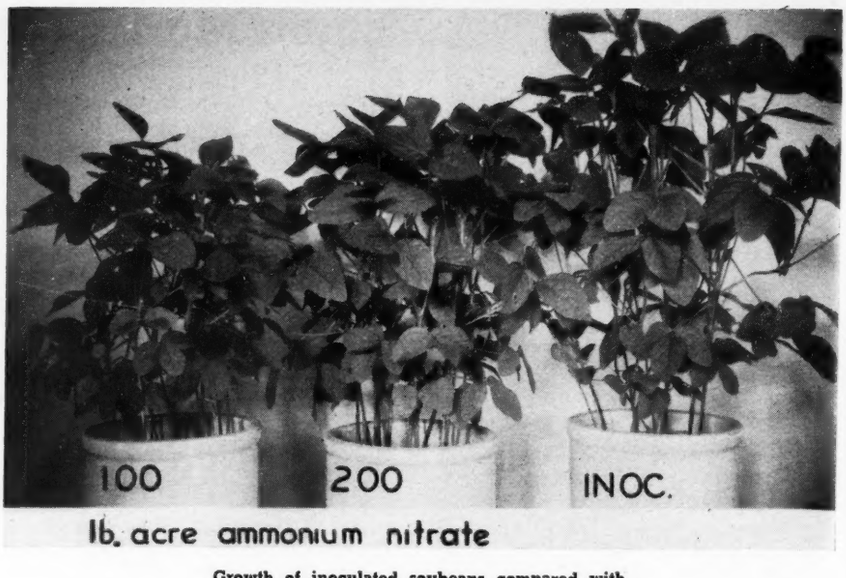
Later surveys of soybean bacteria in the soils of Wisconsin showed that about one-fourth were "good," about one-half were "fair," and that about one-fourth were very poor nitrogen fixers. These results are illustrated in the figure. Bacteriologists have developed ways of holding the bacteria at their peak efficiency and if these bacteria are put on the seed they are very likely to fix more nitrogen than the mixture found in soils, some of which are very poor. If one gets there first with the "good" bacteria the poor ones in the soil don't have a chance.

And in addition to all of this, there is even evidence that inoculated soybeans may give a better crop than uninoculated plants fed all of the nitrogen they can use. This is illustrated in the photograph in which, in spite of the fact that the plants fed combined nitrogen are excellent, and would give remarkable yields, the soybeans fed no nitrogen, but dependent entirely upon the activities of the soybean bacteria are even better.

Even among soybean bacteria there are marked differences in nitrogen fixing ability. It is the task of the producer of inoculumn to search out the most efficient strains, to keep them at peak activity, and to provide the means whereby fresh active efficient bacteria can be placed in large numbers on the seed at the time of planting. In order that the bacteria may be active and not be killed off or lost in the planting process, they must be placed on the seed in the form of a wet suspension, even for the "dry" or "humus" type of inoculumn.

To the basic reasons for inoculation which have been emphasized for the last quarter century, that is:

1. Always inoculate soybeans when growing them for the first time on a new soil.
2. Always inoculate soybeans when grown on slightly acid or acid soils, since inoculation provides an insurance against crop failure due to lack of bacteria.



Growth of inoculated soybeans compared with uninoculated plants supplied with nitrogen.

It is now possible to add several more reasons why one should inoculate, even in cases where there are likely to be plenty of bacteria in the soil, since:

3. One is sure that there are plenty of *efficient, active* bacteria on the seed, where they will do the most good.
4. One can get a crop of higher protein content by inoculating with good bacteria than if one relies solely upon the bacteria in the soil, some of which may be poor in their ability to fix nitrogen and benefit the plant.
5. One can obtain a larger crop of soybeans when grown with efficient bacteria than when all of the nitrogen which they can use is supplied from the soil.

—s b d—

The farmer who spends all of his wartime income is spending himself out of business. After the war he'll have no cash with which to replace and repair buildings and equipment depleted by years of hard war food production.

Every dollar loaned to Uncle Sam in War Bonds helps save assets you already have.

PURINA BUILDS NEW PLANT AT KANSAS CITY

The Ralston-Purina Co. on March 17 began the construction of a large soybean processing plant in the industrial area of North Kansas City. It will be the largest in the Kansas City area and will further fortify it as a major soybean market. The plant is scheduled for completion by Oct. 1, and will have a capacity of 4,000 bushels a day.

The property adjoins Purina's feed mill in Kansas City, and plans will be made in the layout to accommodate two more expellers.

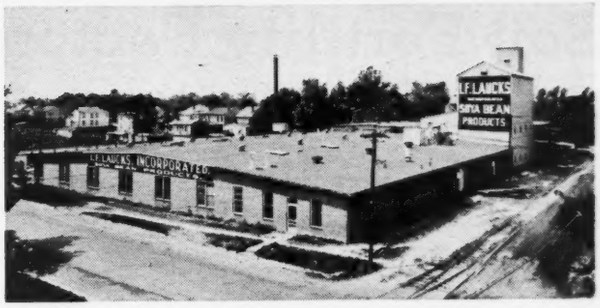
With an eye on the development of soybeans as a great agricultural crop in this area, the Purina management has placed G. H. Banks in charge of this operation. Mr. Banks has been for seven years head of the company's experiments at its Osceola, Ark., plant.

Previous to his Purina experience, Mr. Banks was head of the Arkansas experiment station at Stuttgart, and before that was identified with the Cotton Growers Association there.

The company has embarked on a program of soybean education and development as a pay crop such as it did in Arkansas.

By I. F. LAUCKS: THE STORY OF

SOYBEAN ADHESIVES



Above, I. F. Laucks Soybean Plant, Portsmouih, Va. Below, a Laucks glue laboratory. The company has plants in Sweden, Vancouver, Australia, as well as in the United States. At bottom, mixing soybean glue.

• *I. F. Laucks, President of I. F. Laucks, Inc., at Seattle, Wash., pioneered the soybean glue industry. This is a condensation of two articles by Mr. Laucks appearing in* THE CHEMURGIC DIGEST. *Illustrations are by courtesy of that publication.*

THE discovery of soybean glue was a good illustration of the old adage, "Necessity is the Mother of Invention." The necessity in this case was the infant plywood industry just then stirring to life in the Pacific Northwest.

Two things are necessary for plywood: wood and glue. The pioneers of plywood in the Pacific Northwest knew where to get the wood. But none of the glues being used in plywood exactly suited the requirements of the fir plywood industry. They knew they needed something different, and in their need they turned to a chemist who was operating a customs analytical laboratory. The knowledge and experience of the laboratory force was turned toward a search for a glue that would be what the plywood industry wanted.

I. F. LAUCKS

Soybean passed the original elimination trials. After several years we were ready to make a trial in a plywood factory. We persuaded one of the plywood factories to act as a guinea pig. We shipped them a ton of glue. This ton of glue was sufficiently good so that this one factory changed over their whole operation to soybean glue.

The first plywood made went practically entirely into doors and wall paneling. In a few years plywood began to get into industrial uses. One of the first of these was into various places about an automobile. Detroit started using plywood for floor boards, instrument boards, various places around the body, and finally for running boards.

When a number of running boards began coming apart all over the country, a committee was appointed by the plywood industry to arrange competitive tests to determine the best glue for the industry to use. The result was that soybean glue showed up considerably better than any of the rest, especially in its water resistance.

This was the turning point in the history of soybean glue. By the latter part of 1927, about one year from the date of the competition, every plant on the Pacific coast was using soybean glue.

When soybean glue became available in the east, it had much the same advantages for these people who wanted to make water-resistant boxes as it had in the fir plywood industry in the west. The water resistant box idea has grown steadily in eastern United States until today most of the box shook in use is of water-resistant grades. Of course a large part of this is due to the fact that the government today is the largest buyer and insists on water-resistant plywood. It is produced with water-resistant glue — practically all soybean.

We have developed a number of more or less minor uses for soybean. We found that soybean was a very good emulsifying agent and we developed formulas for emulsifying the petroleum oil products that are used as orchard sprays. We developed formulas for coal briquetting. We also developed a number of uses for soybean in the paint field. A large part of the washable wallpaper which is now on the market is made with soybean adhesive.

In late years a considerable change has taken place in the plywood industry in the United States. The majority of plants in the industry are on the way to being wholly converted to the hotpress instead of the coldpress method. In this hotpress development, the soybean glues as finally formulated were found to have a very great advantage as compared to other types of glues in the hotpress. They were found to be much speedier than other glues, and speed is the essence of the hotpress method.

Soil Fertility Factors Affecting Soybean Yield

By W. H. PIERRE

Iowa State Agricultural Experiment Station

• Experiment Station studies prove that soybeans are definitely not a "poor land" crop. They respond as well to other crops to good soil management practices, including lime and fertilizer in the rotation where necessary, contouring on rolling soils, and the use of manure, says Dr. W. H. Pierre, Iowa State College agronomist.

THE IMPORTANCE of the relation between soil fertility and the yield of soybeans has often not been sufficiently appreciated nor fully understood. Part of this misunderstanding arises from the fact that soybeans sometimes produce relatively better yields on soils of low to fair productivity than do such crops as alfalfa or corn. Moreover, as shall be indicated more definitely later, soybeans usually do not respond as well to direct fertilizer applications as do other common field crops. There is ample evidence, however, to show that soybeans vary markedly in yield on different soil types because of differences in the natural fertility of the soil or because of differences in soil management. It is my purpose in this discussion to review some of these fertility factors that affect soybean yields and to present some data obtained on several phases of the problem.

EFFECT OF FERTILIZERS

In most of the experiments that have been conducted in the midwestern states on the value of direct fertilization of soybeans with phosphorus and potassium, the results have in general been disappointing except where the fertility of the soil was low. In experiments conducted in Iowa by Dr. Martin Weiss in the years 1939 to 1941, inclusive, a significant decrease of nearly two bushels per acre was obtained on two fields in 1940 from the use of 300 pounds of superphosphate per acre. In the other two years, 1939 and 1941, there were no significant increases or decreases from the use of either phosphorus or potassium fertilizers. Lime increased yields an average of two bushels per acre. The yields of the untreated plots in these experiments ranged between 20 and 25 bushels per acre.

DR. W. H. PIERRE

In order to determine whether or not the relatively poor results obtained from fertilizing soybeans on soils of moderate productivity might be due to the method of applying the fertilizer, studies were conducted in 1942-43 in different sections of the state comparing two general methods of applying the fertilizer: (1) plowing under the fertilizer, and (2) broadcasting after plowing and before seed bed preparation. In some plots the fertilizer was broadcast before plowing, while in others it was applied in a narrow band in the bottom of the plow furrow.

A summary of some of the results obtained from seven fields studied is reported in Table 1.

The data show that in only two of the fields were significant increases in yield obtained from the use of 250 or 300 pounds per acre of 0-20-20 fertilizer. Moreover, in none of the cases did the 500-pound rate of application give higher yields than did the 250-pound rate. In the two fields where increased yields were obtained from fertilizers, different results were obtained from the two methods of application. In 1942 on the Webster silty clay loam in Story County, the yields were higher from broadcasting the fertilizer after plowing than from plowing it under. In 1943, however, on the Marion silt loam in Monroe County a larger increase in yields was obtained from plowing under the fertilizer than from broadcasting it after plowing. In both 1942 and 1943 the rainfall distribution was quite satisfactory during the growing season. Although these data are inadequate to allow definite conclusions to be drawn, it appears likely that in dry seasons there may be a real advantage in plowing under the fertilizer for soybeans rather than in broadcasting and discing it into the soil. The fact remains, of course, that in only two of the seven fields did fertilizer produce increased yields; but it should be noted that these fields were all fairly productive, as indicated by the yield of the check plots.

The fact that soybeans have not responded so well to direct fertilization as has corn or other legumes common in the corn belt has sometimes led to the erroneous belief that soybeans are a "poor-soil" crop. The data obtained in the long-time fertility experiments conducted at nearly all the midwestern states all show, however, that as the fertility level of the soil is raised by the application of lime, fertilizers and manure in the rotation, good increases in yield of

Table 1. The response of soybeans to applications of 0-20-20 fertilizer on different soil types, or affected by methods of application. 1942 - 1943.

Exp. No.	County	Soil Type	Yields of untreated plots	Increased yields(1) plow under	Increased yields(1) broadcast after plowing
1	Adair	Tama silt loam	14.6 (2)	None	
2	Davis	Edina silt loam	33.1	None	
3	Clay	Lamoure silty clay loam	28.0	None	
4	Clay	O'Neil loam	27.8	None	
5	Story	Webster silty clay loam	25.0	4.0	7.1*
6	Monroe	Marion silt loam	30.5	4.6*	1.5 (3)
7	Monroe	Edina silt loam	26.1	None	

* Significant response to treatment.

(1) The first five experiments were conducted in 1942, the last two in 1943. In 1942 a 250 pound rate of application of both an 0-20-0 and 0-20-20 were used, whereas in 1942 the rate of application was 300 pounds per acre.

(2) Beans badly damaged by early frost.

(3) More weeds seemed to be prevalent on plots that received fertilizer after plowing.

soybeans are obtained. For example, the average yields obtained at the Illinois Agricultural Experiment Station from the use of different soil treatments in the rotation on four fields in 1937-1941 were as follows: (1) no treatment, 13.7 bushels; (2) manure, 18.3 bushels; (3) manure and lime, 22.3 bushels; and (4) crop residues, lime, phosphorus and potassium, 21.0 bushels.[2]

SOIL FERTILITY LEVELS

One of the factors that will help to determine the long-time place of soybeans in corn-belt agriculture is its ability to compete with corn on soils of high productivity. An important question is, do soybeans respond as well to high levels of soil productivity as does corn? The evidence from many of the long-time rotation and fertility experiments in the Midwest indicates that although soybeans do respond to lime, manure and fertilizers in the rotation, the percentage increase in yield is usually not as high as for the corn in the rotation. In most of these experiments, however, these results might be explained by the fact that corn follows the legume sod whereas the soybeans follow the corn in the rotation. Moreover, the manure is applied to corn.

In order to get more information on this point, soybeans were substituted for corn on one-half the plots in second year corn in our four-year rotation experiment of corn, corn, oats and clover at the Agronomy farm at Ames in 1942 and 1943. In this rotation experiment, which has been in progress since 1916, certain of the plots have received lime, fertilizer and manure in different amounts and combinations, while other plots have not received any soil treatment during this 28-year period. The yields of soybeans and of corn on the six untreated or lowest-yielding plots and on the six highest yielding plots during the past two years show quite conclusively that soybeans responded just as well to good soil treatment or high fertility level, as did corn. With both soybeans and corn, the yields were higher by 41 percent on the plots that had received lime and manure than on the untreated plots.

Table 2. A comparison of the effect of soil fertility level on yields of corn and soybeans

(Webster silt loam—Agronomy Farm, Ames) 4-yr. rotation: (1) Corn (2) Soybeans or Corn (3) Oats (4) Clover

Soil Treatment*	Yields (1942-43) Corn	Soybeans	Ratio of yields of corn to soybeans
None	64.8	23.5	2.76
Lime + Manure (6-16 tons per rotation)	91.2	33.2	2.75
Increase in yield — %	41	41	—

*Six plots are involved in each treatment. The plots that received no soil treatment were the lowest yielding plots in the rotation, whereas, those that received lime and manure were the highest yielding plots.

Another interesting result obtained in this experiment is the marked response of soybeans to large applications of manure in the rotation. Those plots that received 20 tons of manure per rotation (4 years) yielded an average of 6 bushels more per acre than those that received only 8 tons. This indicates that the abundant amount of organic matter added in the manure or the nitrogen, phosphorus, or potassium it contains is responsible for the marked increases in yield.

CONTOURING

Another practice that is important in obtaining high acre yields of soybeans on rolling soils is the practice of contouring. In a number of experiments conducted in Iowa in 1942 the average increase in yields from contouring was 3.2 bushels.[3] Similar results were obtained in 1943, the average increase in yield for the two years on 68 fields being 2.7 bushels per acre. In view of the fact that a substantial amount of the expanded soybean acreage in 1943 will be on rolling soils, that there is a great need of getting the highest production possible, and that contouring is very effective in conserving soil and water the importance of contouring on such soils should be fully recognized.

CONCLUSIONS

It is evident from this brief discussion that soybeans should not be considered a "poor land" crop. Just as with other crops high yields can only be obtained on soils in a good state of fertility. Although soybeans do not respond as well to direct fertilization with phosphorus and potassium fertilizer as do such crops as alfalfa or corn, they do respond well to good soil management practices. The use of lime and fertilizers in the rotation where necessary, the practice of contouring on rolling soils, and especially the use of manure all contribute to high acre yields.

[2]Lang, A. L. and Miller, L. B. What About Fertilizing Soybeans? Illinois Extension Service leaflet, April 1942.

[3]Browning, G. M. On the Contour. Farm Science Reporter, Iowa State College, April, 1943.

★ GROWERS ★

Soybeans Respond

The old adage "It's poor land that won't grow beans" is proving itself on the Illinois soil experiment fields. When grown on soils of moderate productivity, soybeans have suffered less from lack of soil treatment than has either corn or wheat, according to L. B. Miller, assistant chief in soil experiment fields, University of Illinois Agricultural Experiment Station.

"Average soybean yields during the past four years on five moderately fertile experiment fields (Carlinville, Carthage, Clayton, Joliet and Lebanon) were 70 percent as large on untreated land as on adjacent plots which had a high productivity level due to the continued use of manure, limestone and phosphate. During these same seasons corn produced only 58 percent as much and wheat only 60 percent as much without treatment as with manure, limestone and phosphate," Miller reports. In a similar comparison on soils of low productivity at Newton and Oblong, soybeans produced 39 percent as much on untreated land as on treated land, while corn and wheat yielded only 18 percent and 12 percent as much respectively on untreated plots as on those having manure, limestone and phosphate.

New Ohio Varieties

A major project of the department of agronomy of the Ohio Agricultural Experiment Station, in cooperation with the U. S. Regional Soybean Laboratory, is the development and testing of new and superior varieties of soybeans.

During the season of 1943, a total of 145 new selections were "yield-tested" for the first time. Probably less than one-fourth of these will meet the "stiff" requirements for continuation. In nursery and variety trials at nine different locations were tested about 50 of the best new selections from Ohio, Indiana, Illinois, Iowa, and Missouri in comparison with standard varieties.

A principal aim of the breeding program in Ohio is to find superior new varieties that will mature sufficiently early to precede wheat in northern Ohio.

Don't Seed Too Heavily

Using a too heavy seeding rate for planting soybeans cuts down the yield and may affect the quality of the crop, because it will lodge more and maturity will be retarded.

This was shown in four years of testing five varieties of soybeans seeded at rates ranging from .6 bushel to 2.2 bushels to the acre. In tests conducted on the agronomy farm of the Iowa Agricultural Experiment Station, Ames, the yields from the different rates varied only slightly up to seeding rates of 1.8 and 2.2 bushels to the acre, when the yield decreased.

For soybeans planted in rows about 32 inches apart, the rate of seeding for maximum yields with seed of high germination need not be more than 1 bushel to the acre.

Planting Date and Oil Yield

A study of the effect of date of planting soybeans on yield and composition of the seed — conducted uniformly at three locations in the soybean belt during three seasons with five varieties — showed that the yields decreased as the date of planting was delayed beyond May 1, reports the chief of the Bureau of Plant Industry, Washington.

Plantings were at five dates, ranging from May 1 to June 15. Oil content of the seed decreased, whereas protein content appeared unaffected by date of planting. Iodine number of the oil increased as the date of planting was delayed. The data give some indication that, within the dates represented, early planting will increase total oil yield per acre, which is a product of the two factors, yield per acre and percentage of oil.

Planting Intentions

● FALL BELOW 1944 GOALS

A decrease of 1 percent from last year is in prospect for the 1944 acreage of soybeans *grown alone for all purposes*, according to the March 20 forecast of the U. S. Crop reporting board. Growers' intentions indicate 14,619,000 acres to be planted this year compared with 14,762,000 acres in 1943.

But if the 1939-42 average state yields of soybeans for beans are obtained this year, the indicated acreage for beans would produce a crop of about 200,000,000 bushels, 2 percent more than the record crop of 1943.

Farmers in the north central states, where about 78 percent of the total acreage is grown, expect to plant 11,391,000 acres, an increase of less than 1 percent over 1943. In Illinois, the largest producing state, farmers' plans indicate a decrease of 3 percent from the acreage planted last year. Among the other major producing states, Iowa plans an increase of about 10 percent over last year, Indiana 1 percent, and Ohio 4 percent.

In the south Atlantic states, a decrease of about 8 percent is expected, with West Virginia the only state indicating an increase. The south central states as a group expect a decrease of 6 percent from last year. Tennessee and Arkansas indicate some increase, while all the other states in this group expect either no change or less acreage than last year. In the states on the western fringe of the soybean area, from North Dakota southward through Texas, where the soybean area has expanded and acreage has increased rapidly in the past few years, a sharp decrease is indicated for 1944.

The crop has proven rather disappointing to many growers in some of these states because some land was planted to soybeans which was not suitable for the crop and also because of serious damage from early frost. In other states of this group, the crop has not been able to withstand drought and hot weather as well as some of the other crops usually grown in the area.

The prospective acreage to be harvested for beans in 1944 is about 11,096,000 acres. In calculating the percentage to be harvested for beans, the same figure is taken as in 1943, except in the southern states, where drought resulted in an unusually large proportion harvested for hay, and where the 1942 percentage is taken. Such a 1944 acreage would be 2.6 percent more than the 10,820,000 acres harvested in 1943. In calculating total planted acreage for this year, the 1944 interplanted acreage is assumed to be the same as last year.

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Canada's commercial supply of soybeans promises to be smaller during the 1943-44 crop than in 1942-43 despite the increase in acreage, according to the Dominion Bureau of Statistics. Substantially larger amounts are being retained for feeding, especially in Ontario where the bulk of the crop is produced.

1944 PROSPECTIVE ACRES, WITH COMPARISONS

Soybeans for Beans, Harvested Acres

State and Region	1943	1944 Goal	1944 Indicated for beans*	Percent of 1943
N. Y.	20	22	24	120
N. J.	20	25	18	90
Pa.	45	100	49	109
N. E.	85	147	91	107
Ill.	3,444	4,000	3,364	98
Ind.	1,464	1,600	1,479	101
Iowa	2,017	2,890	2,218	110
Mich.	103	150	105	102
Minn.	246	300	263	107
Mo.	561	625	569	101
Nebr.	82	100	41	50
Ohio	1,333	1,500	1,387	104
S. Dak.	23	35	14	61
Wis.	68	100	61	90
N. C.	9,341	11,300	9,501	102
Del.	39	65	46	118
Md.	36	65	51	142
Va.	96	250	128	133
W. Va.	3	2	2	67
N. C.	257	400	280	109
Ky.	78	145	87	112
Tenn.	73	150	94	129
E. C.	582	1,077	688	118
Ala.	44	30	45	102
Ark.	267	375	283	106
Ga.	13	17	13	100
La.	41	50	68	166
Miss.	142	205	185	130
Okla.	10	12	6	60
S. C.	16	15	13	81
Tex.	25	28	12	48
South	558	732	625	112
Kans.	244	350	183	75
N. Dak.	10	10	8	80
West	254	360	191	75
U. S.	10,820	13,654	11,096	103

*1944 prospective acreage alone (B.A.E. Prospective Plantings Report) plus one-half of 1943 interplanted acreage by States.

Annie Williams-Heller

Josephine McCarthy

From Soup to Nuts

SOYBEANS . . . and People

THE DISTINCTION of publishing the first full book of soybean recipes is claimed by Vanguard Press, New York City. This, the publishers say, "if during the coming months, the food situation continues difficult, may well earn the distinction of being the most practical and useful volume ever issued by this house."

The book is *Soybeans, from Soup to Nuts.* The co-authors, Annie Williams-Heller and Josephine McCarthy. The volume is nicely clothbound, 119 pages in length, and sells for $1.25.

The authors were well qualified for their task of preparing this little volume. Annie Williams-Heller, a former Austrian and now an American citizen, has had international experience as a consultant and author in the field of nutrition and food. Josephine McCarthy has had 20 years experience as a restaurant and bakery chain executive, and has supervised the training of hotel food workers. As home economist for the American Institute of Food Products, she is known as "Ella Mason" and is heard daily with Dr. Walter H. Eddy on the Food and Home Forum over Radio Station WOR, New York City.

The book tells how to prepare soybeans in all their various forms, including not only soy flour and grits, which are most readily available commercially, but also the fresh green and dried whole beans, the sprouts, and as milk, curd and pulp, these latter uses the ones most generally employed by the Chinese.

Recipes include appetizers, soups, meat stretchers and substitutes, croquettes and fritters, side dishes, salads, sauces, sandwich spreads, breads, quick breads and desserts. The book is a must for soybeaners looking for new and adventurous ways of using their product.

The following recipes are reprinted by permission of the publishers:

Pureed Soybean Soup

1½ cups cooked soybeans
2 cups liquid (water or bean broth)
2 cups milk
1 medium onion
1 tablespoon all-purpose flour
1 teaspoon salt
Dash of pepper

1. Chop soybeans fine. 2. Heat soybeans, if cold, and puree. 3. Add onion and liquid and bring to a boil. Simmer for 10 minutes. 4. Make a smooth paste of the flour and 2 tablespoons of milk and stir into soup. 5. Add milk and seasoning, heat, and serve with toasted bread or bread sticks.

Soybean Loaf

3 cups cooked soybeans
2 slices stale bread
½ cup liquid (or soybean milk)
2 teaspoons salt
1 egg
1 small onion
1 small green pepper

1. Soak bread in milk, and flake with two forks. 2. Mince onion and green pepper. 3. Mix all ingredients together until well blended. 4. Pack into a greased loaf pan and bake in a moderate oven for about 45 minutes. 5. Serve with tomato sauce.

Little Omelets

1 cup cooked and drained soybean sprouts
4 eggs
½ cup soybean milk (or milk)
¼ teaspoon salt
Celery salt and pepper, to taste

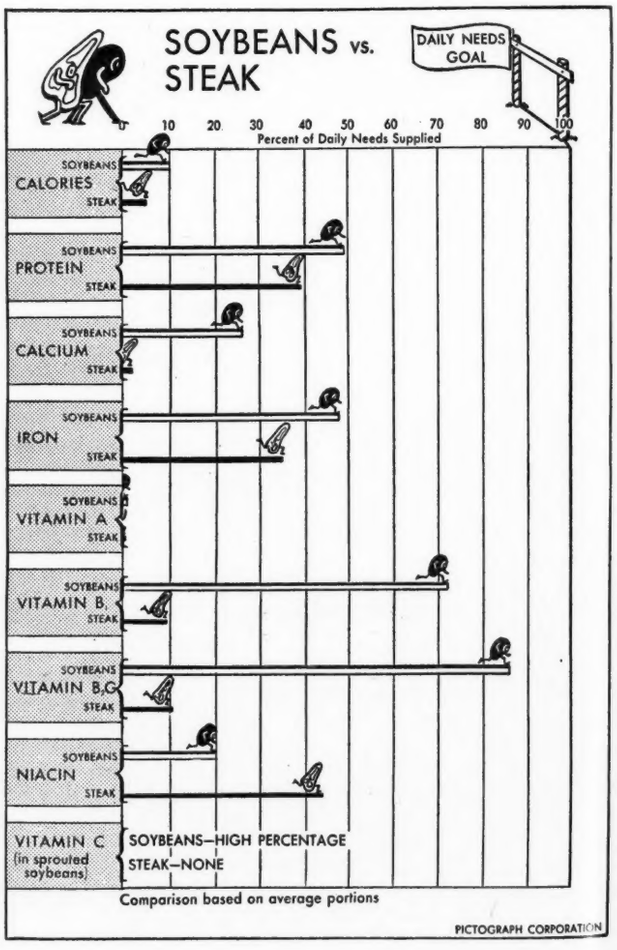
1. Beat eggs until light and foamy. 2. Add milk, bean sprouts, and seasoning. 3. Drop a small amount at a time into hot, greased pan or on griddle. Brown on both sides and serve immediately.

Soybean Sprout and Raisin Salad

2 cups soybean sprouts
2/3 cup raisins, or
1 cup seedless grapes
3 to 4 stalks celery
1 cucumber pickle
2 eggs
Salt, to taste
Mayonnaise
Lettuce

1. Rinse and drain bean sprouts, simmer in a little water for 12 minutes, drain, and cool. 2. Wash raisins in boiling water and cool. If grapes are used, wash grapes well. 3. Crosscut celery in thin slices, to make 3/4 of a cup. 4. Hard-cook eggs, and chop fine. 5. Chop pickle. 6. Combine all the ingredients, blend well with mayonnaise, and serve on lettuce.

Chart from SOYBEANS FROM SOUP TO NUTS, the new cookbook showing how to use America's miracle food.



Growing Edible Soybeans

● SOME PRACTICAL HINTS

By W. L. BURLISON

Head of Agronomy Department, University of Illinois College of Agriculture

From an Address at Farm and Home Week

Growing soybeans in the victory garden should be no more difficult than producing snap beans. And because of the current scarcity of meat, the vegetable soybean with its high protein content will add an energy food to the family diet.

As to varieties — growers of vegetable soybeans for the canning industry have used Bansei, Giant Green and Hokkaido varieties rather extensively. A number of the so-called grain types, such as Chief, Illini, Manchu and Patoka, are excellent as a green vegetable despite more oil and less starch.

The soybean will succeed on all types of good soil, the best results being obtained on mellow, fertile loams or sandy loams. In general the soil requirements are about the same as those of corn, but the soybean will make a more satisfactory growth than corn on soils somewhat low in fertility, provided inoculating organisms are present.

And in general the climatic adaptations of soybeans are about the same as for corn. After the soybean is well started it is highly resistant to drought, and a wet season does not seriously retard growth or decrease yield. The soybean plant seems to adapt itself not only to soils but to seasons as well.

One point frequently overlooked by the home gardener is the use of inoculation. If soybeans have not been grown before, the soil should be inoculated. This may be affected by using pure cultures of the soybean bacteria or by application of soil from a field where well-inoculated soybeans were grown the year before. Pure soybean cultures, which may be bought from commercial seed firms, are applied directly to the seed shortly before seeding.

Soybeans may be planted during a period extending from early spring to midsummer. It is possible to grow several varieties with different maturities so that the green vegetable may be picked from mid-August to mid-October.

For planting soybeans in short rows for the home garden, 100-150 seeds per rod are enough. Garden plantings are made with a small single row planter or by the conventional hand method. Since vegetable beans are intended for food, row plantings are preferable.

Cultivation should begin as soon as seedlings appear and should be frequent enough to keep down weeds. Usually two or three cultivations after the beans are up will be enough. Comparatively little injury results if soybeans are cultivated during the heat of the day when the plants are tough. It is not advisable to cultivate when they are tender from rain or dew as the plants are then easily bruised and broken.

Harvesting is not a problem for the home gardener. Vegetable soybeans remain in edible condition as green shelled beans for quite a long period. They are ready to use as soon as the pods are plump and the seeds are nearly full size. They remain usable until the pods show signs of beginning to ripen and just before the seeds begin to shrink. In harvesting small lots of green beans for table use, the plants can be pulled up or cut off near the surface of the ground, and carried to the kitchen or some shady place, where the pods can be removed by hand. Or the pods can be picked from the plants in the field, leaving the stalks to be plowed under for humus.

WASHINGTON DIGEST

By PORTER M. HEDGE
Washington Correspondent for The Soybean Digest

Priority on Soybean Meal

War Food Administration this month announced that soybean growers would be given first call on supplies of soybean oil meal processed from the 1944 crop and distributed under provisions of the Government set-aside order.

The announcement was so vague and inconclusive that its full effects upon the pattern of protein oil meal distribution cannot be measured until WFA clarifies its policy.

Main purpose of the new plan is to increase the incentive for planting soybeans and for harvesting the oil seed after they are grown.

The announcement, framed in only 87 words, said:

"The War Food Administration today announced that in order to assure more equitable distribution of the soybean meal during the 1944-45 season, a portion of the available supply will be subject to a set-aside order.

"Each soybean producer will be given opportunity to obtain sufficient quantities of such meal to meet his own feeding requirements from any set-aside meal allocated to the state in which the farmer is located, up to the quantity of meal produced from the soybeans grown and sold by him."

Subject to further interpretation of policy and to development of the grower-preference program, these are the effects privately expected by WFA officials: (1) A probable increase in the amount of the set-aside next fall, (2) greater allocations of set-aside meal to Corn Belt and other states with large livestock populations, and (3) probable extension of grower preference to cottonseed meal.

Oil Meal Issue

The issue of protein meal distribution has bobbed up in the House, where Congressman Lawrence H. Smith (R-Wis.) levelled a charge at the Administration that "there is a serious default" in the distribution of protein feeds.

Congressman Smith, in a speech March 27, presented tables based on March distribution of oil meals in support of his claim that meal is "not going into the best food producing areas."

The Wisconsin lawmaker is advocating a system of distribution that would match oil meal shipments with livestock population as nearly as possible. He has introduced a resolution in the House to this effect.

The Food Administration has not publicly answered the charge. But data on oil meal distribution during the four months, beginning in January, that the Government set-aside order has been in effect, have been prepared for submission to Congress.

The official tabulation shows trade distribution and WFA allocations of four oil seed meals — soybean, cottonseed, peanut, and linseed — for this period compared with the estimated average monthly usage by states during the 1941-42 crop year.

During the four-month period a total of 1,993,208 tons of meal were distributed, an average of 498,302 tons a month. This compares with a monthly average usage for the 1941-42 crop year of 353,650 tons. WFA allocations accounted for 512,390 tons of the total, slightly more than a third, and regular trade distribution for 1,479,818 tons.

Expellers Allocated

About 30 more expellers for soybean processing plants will be allocated during the remainder of 1944 to complete the soybean plant expansion program of War Food Administration's Office of Materials and Facilities, *The Digest* has been informed.

Officials themselves don't yet know where the new equipment will be allocated, but locations in Ohio and Indiana are good prospects. These states are reported to be deficient in crushing capacity, both in terms of oil seed production and oil meal requirements.

The underlying policy governing allocation of crushing equipment, officials say, is to obtain more even distribution of oil meal with the lowest cost in transportation tonnage.

The Office of Materials and Facilities emphasized to *The Digest* that "we have allocated every expeller we could get our hands on — the only limit on allocations has been the number we could get produced."

With the installation of the new and other expellers already approved, officials estimate the northern area of the country will have a total soybean plant crushing capacity of about 170,000,000 bushels a year — about 50,000,000 bushels more capacity than was available at the beginning of 1944.

WFA officials feel that this capacity will be adequate to handle most of the processing demand in the northern area, which includes the states east of Idaho, Utah, and Arizona, and those north of the southern boundaries of Virginia, Kentucky, Missouri, Kansas and Colorado.

Flour Hearing

As *The Digest* indicated in February, the Federal Security Agency announced this month that action on the proposed bread standards under the Food and Drug Act which would have limited the amount of soya flour permissible in white bread has been postponed indefinitely.

Administrator Paul V. McNutt said the postponement was decided upon "in the interest of flexible war food management." The announcement declared:

"The agreement (to postpone action) was reached on the basis of joint investigation of all the issues involved by the Food and Drug Administration and the War Food Administration.

"In raising the question, the latter had pointed out that it is desirable to continue the permissive use of certain ingredients, such as soybean flour and dried whey, not permitted by the proposed standards; that changes may later become necessary involving modification of bread compositions which would not be allowed under the proposed standards."

Prospect Improves

A general upward trend in soybean acreage was indicated this month by a comparison of AAA's farm plan signup during the early and latter parts of March.

Both triple A farm plans and the regular March 20 intentions to plant report indicated during the early part of the month soybean plantings would fail to meet the 13,654,000-acre goal by around two and a half million acres.

But the April summary of triple A farm plans, based on the signup during the latter part of March, indicates a considerable increase in soybean acreage.

The improvement between early and late March was four percent in Illinois and Indiana, and three percent in Iowa, all heavy soybean producing states.

Though AAA farm plans still indicate

soybean plantings will fall short of the goal — the largest soybean acreage ever sought in the history of the country — the April report cheered War Food Administration officials.

The AAA committeemen campaign to boost acreage despite the competition of other crops, unfavorable weather, and the lateness of oats planting were credited here with the increase.

For the 10 Corn Belt states the triple A farm plans indicate soybean plantings of 10,007,000 acres, or 89 percent of a goal for these states of 11,300,000 acres. These figures are based on a sample of around 100,000 farms on some of which data were collected up to March 25.

The following table gives the latest soybean acreage picture available here as now indicated in four of the important soybean producing states:

	Goal	Indicated acreage	Percent of goal
Illinois	4,000,000	3,547,000	89
Indiana	1,600,000	1,698,000	106
Iowa	2,890,000	2,118,000	73
Ohio	1,500,000	1,466,000	98

Margarine Allocation

War Food Administration was preparing to announce allocations of oleomargarine for the second quarter of 1944 as *The Digest* went to press.

The total allocation of margarine for all purposes was expected to be 131,200,000 pounds fat content. Of the total, civilians were expected to be allocated 103,000,000 pounds, 17 million pounds less than last quarter.

Soya Food Is Here to Stay

(Special to The Soybean Digest from Washington, D. C.)

Recent reports indicate that the American people have gone for soya protein in a big way.

Average per capita consumption is one pound per person of this highly concentrated protein food. All signs indicate that this is only a beginning. But it is six or eight times more than the per capita consumption two or three years ago.

Soya foods have been purchased by the public in the open competitive market because of the better flavor, better color, and better general appearance of products in which the protein was included. Leading domestic products in this category include soy pancake mixes, doughnuts, bread, cakes, pies, meat loaves, candy and soups. Authorities indicate that when the present temporary pork feast is over the public may look to a greater number of such soya products to cover their protein requirements.

Realistic Russians and the British have used much American soybean protein which they could import in extremely concentrated cargo space. It is declared here that American relief agencies, while fully appreciative of the high nutritional value of soy protein, have delayed much of its effective use for relief purposes by fastidiously searching for the most attractive food flavors aimed to please the recipients.

Some nutritionists feel there has been a delay in the soya food development because of a tendency in some official quarters to think up dainty de luxe picnic basket foods for relief in Europe and Asia, rather than hastening the product itself into channels of consumption when protein is in such immense demand.

Vegetable proteins, such as soya proteins and cereal proteins, are right now coming into greater attention since War Food Administrator Marvin Jones expressed less confidence in the elasticity of other standard proteins. The problem of supply has been solved. At the request of government officials, the soy flour industry did a remarkable job of expansion to a processing capacity of one and a half billion pounds of soy flour a year. Much of this capacity will be idle if government agencies continue to export the large quantities of poultry, dairy and meat products which are included in the standard proteins. Administrator Jones is said to have had some such thoughts in mind when he warned that we could not continue to be the food supplier of the world.

Officials here generally agree that soya foods will play a large part in the relief program of Europe when conquered countries are released from the enemy. They agree, too, that soya foods are in the domestic market to stay and that the future outlook is bright. Packaged soy flour should gradually gain a substantial permanent market.

—sbd—

Dried soybeans are a good source of calcium, which is bone- and teeth-building material.

★ PUBLICATIONS ★

EDIBLE SOYBEANS IN NEBRASKA, by J. M. Slatensek and T. A. Kiesselbach, Nebraska Experiment Station Bulletin 356, Lincoln, Nebr.

The Nebraska experiment station has tested a number of edible varieties for several years, taking into consideration productivity, vegetative habits, cooking qualities and palatability. The most extensive collection of prominent vegetable varieties was grown on the experiment station farm in 1943. The results for 13 vegetable and one field variety are given.

Recommended varieties are:

Bansei, early, highly productive, a favorite.

Mendota, received from the Wisconsin station for the first time in 1943. Somewhat earlier than Bansei and seeds somewhat smaller. In the single year at Lincoln it has produced more than any other vegetable variety.

Kanro, an early soybean with slightly larger seeds than those of Bansei. Yields are good and the table qualities excellent.

Jogun, a mid-season, large-seeded variety with high yielding ability. In some seasons shattering may prove to be a serious handicap.

Illini and *Dunfield*, the two most prominent field varieties in Nebraska, are also recommended as being edible and palatable as food.

INFLUENCE OF FERTILIZER, FERTILIZER PLACEMENT, SOIL MOISTURE CONTENT, AND SOIL TYPE ON THE EMERGENCE OF SOYBEANS, by A. H. Probst, assistant agronomist, U. S. Regional Soybean Laboratory, Lafayette, Ind., in *Journal of the American Society of Agronomy*, February, 1944.

Studies are reported on the influence of kind and rate of application of fertilizers, fertilizer placement, soil moisture content, and soil type on the emergence of soybeans.

Three analyses of fertilizers applied at six different rates, two methods of placement, two soil moisture levels, and two soil types were used in these studies during the three-year period of 1939-41, inclusive. The Dunfield variety of soybeans was used.

Fertilizers applied to soybeans under the conditions of these experiments usually inhibited emergence to some extent, but not always significantly, irrespective of kind or amount of fertilizer used, placement, soil type, or moisture content of the soil.

In general, emergence was inhibited in proportion to the rate of application and kind of fertilizer used when applied in contact with the seed.

Fewer plants emerged at the low soil moisture content than at the high soil moisture content when the fertilizer was applied in contact with the seed. In the absence of fertilizer, or when the fertilizer was applied in bands, the difference in emergence due to soil moisture content was not so pronounced except under field conditions.

The type of soil used did not appear to have a definite influence on soybean emergence, either in the presence or absence of fertilizers.

Soybeans emerged more rapidly in the absence of fertilizer or in the presence of fertilizer applied in bands than when the fertilizer was applied in contact with the seed.

Phosphate fertilizer delayed emergence less and reduced final emergence less than potash; in combination these fertilizers gave cumulative deleterious effects on emergence and rapidity of emergence when applied in contact with the seed.

—s b d—

MEETING AMERICAN OIL CHEMISTS

Robert M. Walsh, Principal Agricultural Economist in the Division of Statistical and Historical Research of the United States Department of Agriculture, will be among the speakers at the 35th Annual Meeting of the American Oil Chemists' Society, May 10 to 12, at New Orleans. Mr. Walsh, who is editor of *The Fats and Oils Situation*, will deliver a paper on the economics of fats and oils, a field in which he is a nationally recognized authority.

In addition to the general papers there will be a symposium on the physical properties of fats and oils which will include papers on X-ray and ultra-violet spectroscopy, specific and latent heats, viscosity and plasticity, and the practical application of physical methods of processing including liquid-liquid extraction and continuous solidification of lubricating greases.

★ GRITS AND FLAKES ★

FROM THE INDUSTRY

The American Bakers Association and the Associated Retail Bakers of America have joined in asking the Food and Drug Administration to withhold further action on proposed bread standards for the duration. The two associations also have requested that when further action is planned all interested persons be given an opportunity to file petitions indicating new developments which should be made the subject of a re-hearing to correct and complete the record. The action was taken because the associations feel that the evidence introduced at the hearing on bread standards in 1941 may no longer be a reflection of true facts due to the length of time that has expired and the fact that war necessities have accelerated research and development of many ingredients.

R. J. (Jack) Little, of Clinton, Iowa, has been appointed superintendent of the central feed division plants of Pillsbury Feed Mills and Pillsbury Soy Mills division of Pillsbury Flour Mills Company, according to an announcement by Philip W. Pillsbury, president. This responsibility covers feed manufacturing and soya processing plants at Clinton and Centerville, Iowa; Minneapolis, Minn.; and Atchison, Kansas. Little has had 21 years experience with large feed and soya plant and elevator operation, management, layout, construction and maintenance.

Fire destroyed the Missouri Farmers Association feed and soybean mill at Mexico, Mo., March 17, causing $250,000 damage and wiping out months of work in preparing the property for active operation. Storage stocks destroyed amounted to 18,000 bushels soybeans, 16,000 bushels wheat and 8,000 bushels corn. The M. F. A. concern, which does a large feed business in the state, has not announced its plans to replace the property.

A $60,000 mill to process soybeans and flax will be erected near its refining facilities at Coffeyville, Kans., by Consumers Cooperative Association as soon as equipment is obtained under its priority rating. It will be an expeller type plant which, when put in operation, will be another step in the cooperative wholesale's plan of building a complete feed program. It will process 1,600 bushels of soybeans daily.

Philip J. Ehman, a research chemist with Ansul Chemical Company, Marinette, Wisconsin, for the past eight years, has been named assistant research director, according to announcement made by H. V. Higley, the firm's president. The appointment took effect February 7th. Dr. Walter O. Walker is director of research and development at Ansul. Ehman joined the Ansul research staff in May, 1936.

Dr. E. B. Earley, plant physiologist of the Regional Soybean Laboratory, Urbana, Ill., has been transferred to Columbia, Mo., for the duration, to carry on the cooperative soybean breeding and testing program formerly conducted by Dr. D. I. Allen. Dr. Allen is serving his country as a member of the Sanitary Corps. He has been recently assigned to foreign duty.

The industrial department of the Nickel Plate railroad has issued 1943 soybean production maps for Indiana, Ohio and Illinois, similar to those prepared by the road in the past. Location of the processing plants is starred on the maps, and acres grown and harvested and bushels harvested are broken down by counties.

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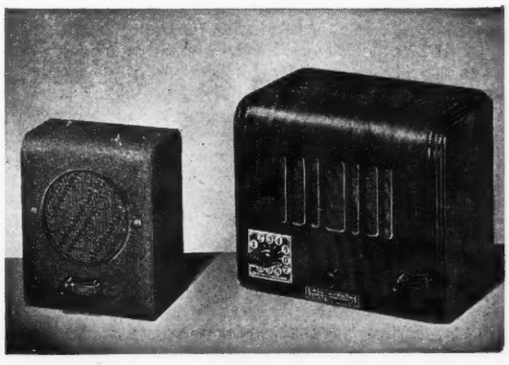

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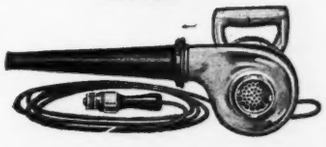

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--- MARKET STREET ---

We invite the readers of THE SOYBEAN DIGEST to use "MARKET STREET" for their classified advertising. If you have processing machinery, laboratory equipment, soybean seed, or other items of interest to the industry, advertise them here. Rate: 5c per word per issue. Minimum insertion $1.00.

FOR SALE — 80 H. P. Bross Boiler, H.R.T., 14 ft. long, 44 tubes, in good condition. Hammer tested for 100 lbs. pressure. Agricultural Produce, Inc., 304 First Ave. Southwest, Rochester, Minnesota.

FOR SALE: Used Steel Storage Tanks, 8,000, 10,000, 12,000, 18,000 gal. And other sizes. Stanhope, Wayne, Penna.

Seed Directory

A charge of $1 has been made for listing in the March, April and May issues. Listings in the May issue can be made to subscribers for 50c. Quantity for sale and variety are included.

IOWA

Castana — Fred W. Hawthorn, 1,000 bu. blue tag, certified Richland, germination 92 percent. No crop or weed seeds.

Hudson — Strayer Seed Farms, 2,500 bu. Richland, 250 bu. Kingwa, 250 bu. Bansei, 500 bu. Mukden.

Sac City — F. H. Wilson, 400 bu. certified Richland.

Sac City — Williams Milling Co., 4,000 bu. certified Richland.

Sac City — Hobart Hill, 250 bu. certified Richland, germination 95 pct.

New Hartford — Moore & Good, 2,000 bu. certified Richland, 5,000 bu. uncertified Richland, 2,000 bu. uncertified Habaro.

Marcus — R. E. Simonsen, 900 bu. uncertified Richland, from certified seed.

Sanborn — O. J. Bieser, 100 bu. certified Richland, 50 bu. uncertified Mukden, 350 bu. uncertified Richland.

Whiting — Knud Westergaard, 3,000 bu. certified Richland.

Boone — Roscoe Marsden, 250 bu. certified Richland, blue tag, 93 pct. germination.

Hampton — Ralph R. Hurd & Fred Blau, 700 bu. certified Richland.

Sac City — M. R. Clark and W. C. Otto, 300 bu. certified Richland, 98 pct. germination.

Remsen — Frank Lenertz, 900 bu. certified Richland, 500 bu. certified Tama oats, 1,000 bu. uncertified Boone oats.

Hampton — Reuben Burmester, Rt. 3, Box 36, 300 bu. certified Richland.

INDIANA

Remington — Chester B. Biddle, 1,000 bu. certified Dunfield, 1,500 bu. certified Richland.

Pence — D. L. Martin, 2,800 bu. certified Richland, 700 bu. certified Dunfield, 250 bu. certified Chief.

Windfall — Mitchell Farms, 2,000 bu. certified Richland, purity 999, germination 90.

Noblesville — Conner Prairie Farm, Rt. 5, 2,000 bu. certified Richland, purity 99, germination 92 and 95.

Peru — Richard E. Edwards, P. O. Box 315, 1,300 bu. certified Richland.

Indianapolis 44 — Walter R. Askren, Rt. 10, Box 188, 500 bu. certified Richland.

Leesburg — Ralph Brubaker, 200 bu. certified Earlyana, 300 bu. uncertified Richland.

Windfall — Byron Legg, 1,000 bu. certified Richland, 93 pct. germination, 1/10 pct. mixture.

Ft. Wayne 8 — O. L. Bryant & Son, Rt. 4, 500 bu. certified Richland, 800 bu. certified Dunfield.

Indianapolis 44 — Phillip W. Irwin, Rt. 19, Box 676, 2,000 bu. certified Richland.

Greenfield — Raymond E. Roney, 15 bu. uncertified Funk Delicious, 99 pct. varietal purity; 100 bu. certified Patoka, 99.6 pct. varietal purity; 200 bu. certified Richland, 99.95 pct. varietal purity.

Evansville — Henry L. Hahn, Rt. 2, 2,000 bu. certified Gibson.

Muncie — O. C. Russell & Son, Rt. 1, 500 bu. certified Richland, 200 bu. certified Dunfield, 200 bu. certified Kingwa (black hay bean), all high in varietal purity.

Crawfordsville — Walter J. Harper Seed Co., Rt. 1, 200 bu. certified Richland, 200 bu. certified Mandell.

Seymour — T. Volney Carter, Rt. 2, 400 bu. certified Chief.

Swayzee — John W. Whybrew, Rt. 1, 800 bu. certified Richland.

Milford — Lee R. Cory, Rt. 1, 700 bu. certified Mandell.

Alexandria — Eugene Gwaltney, Rt. 1, 400 bu. certified Richland.

Knightstown — Ray Cannell, Hackleman Farms, 1,200 bu. certified Chief, 500 bu. uncertified Richland.

Princeton — Princeton Farms, 700 bu. certified Patoka, 700 bu. certified Gibson, 600 bu. uncertified Macoupin.

Kouts — Wm. H. Olsen, Rt. 1, 1,000 bu. uncertified Richland.

Hartford City — D. M. Langdon Sons, Rt. 1, 800 bu. certified Richland.

Williamsport — Floyd Martin, 600 bu. certified Richland, 400 bu. certified Dunfield.

Lapel — Omar J. Sears & Sons, Rt. 1, 700 bu. certified Richland.

ILLINOIS

Champaign — Seeber Bros., Rt. 3, 6,000 bu. certified Chief; 1,000 bu. uncertified Richland; 1,500 bu. uncertified Mt. Carmel.

Normal — H. L. Stiegelmeier, 706 Normal Ave., 1,200 bu. certified Richland.

Atwood — John H. Livengood, Sr., 600 bu. certified Dunfield, 100 bu. certified Patoka, 300 bu. certified Richland.

Mason City — Ainsworth Seed Co., 1,000 bu. certified Chief, 500 bu. certified Richland, 2,500 bu. uncertified Illini.

Cantrall — C. E. Canterbury, 500 bu. Illini, 2,500 bu. certified Chief.

Ladd — Martin Manning, 250 bu. certified Richland.

Pittsfield — K. S. Kern, 225 bu. certified Chief; 175 bu. uncertified Chief.

Compton — Clarence Ackland, 1,600 bu. certified early Richland, field purity 99.9 pct.

Kansas — Adin Baber, 400 bu. certified Chief.

San Jose — Kelly Seed Co., 20,000 bu. uncertified Illini, 2,200 bu. certified Chief, 1,500 bu. uncertified Chief, 11,500 bu. uncertified Richland, 800 bu. certified Richland.

Rantoul — Harold Zehr, Rt. 1, 500 bu. certified Illini.

Champaign — Maxwell Farms, Rt. 2, 800 bu. certified Chief.

Sidney — Marshall Butzow, 1,000 bu. certified Chief, 450 bu. certified Patoka, 725 bu. uncertified Richland.

Manhattan — Lawrence Meyer, Rt. 1, 1,200 bu. certified Richland.

Minooka — William Rushton, Rt. 2, 200 bu. certified Richland.

OHIO

Maumee — W. N. Woods & Son, Monclova Rd., 300 bu. certified Richland, 500 bu. uncertified Richland.

Franklin — Carl J. Miller & Son, Rt. 1, 150 bu. certified Dunfield.

Delphos — Lawrence W. Adam, Rt. 1, 90 bu. certified Dunfield.

Ada — J. R. Spar, 200 bu. certified Dunfield.

New Weston — John N. Kramer & Sons, Rt. 1, 150 bu. registered Scioto.

Huron — Fries Farms, 500 bu. registered Richland, 300 bu. registered Mingo, 165 bu. uncertified Mingo.

Avery — J. Schlessman & Sons, 200 bu. registered Richland, 200 bu. registered Mingo, 500 bu. uncertified Richland, 500 bu. uncertified Mingo, 200 bu. uncertified Manchu.

Fostoria — K. C. Treier, Rt. 1, 200 bu. registered Richland, 150 bu. uncertified Richland.

Bloomdale — W. A. Wasson & Son, 200 bu. certified Richland, 125 bu. uncertified Richland.

Fostoria — Harold E. Ecker, Rt. 4, 400 bu. certified Richland, 500 bu. certified Mingo, 600 bu. Wisconsin No. 3.

Amanda — Herbert N. Ruff, 200 bu. registered and certified Mingo.

MISSOURI

Hayti — R. F. Greenwell, Box 284, 200 bu. certified Chief, 800 bu. certified Ralsoy.

MINNESOTA

Wood Lake — Neumann's Seeds & Service, John A. Neumann, Mgr., 30 bu. early Minnesota Manchu, Minn. Reg. No. 1 blue tag.

Minneapolis 13 — Twin City Seed Co., 130 2nd St. N. E., carries Pridesoy, Kabott, Minsoy, Mandarin, Habaro, Wis. Manchu No. 606, Minnesota Manchu, New Improved Wis. No. 3 Manchu, and Richland.

NEW JERSEY

Ringoes — W. Chmielewski, Edible varieties available: Bansei, Etum, Imperial, Funk Delicious, Easycook and Giant Green.

★ BOOKS ★

I LIVED WITH LATIN AMERICANS, by John L. Strohm, published by the Interstate, Danville, Ill. 300 pages. 176 illustrations. Price $2.00.

The present managing editor of *Prairie Farmer* has traveled in 54 countries. He got the material for this book while on an assignment of a 25,000 mile trip through Latin America.

He is one author who did not spend all his time in hotel lobbies and government offices of Latin America. He talked with peons as well as presidents, and really lived among the folks whom we must know better if we are to formulate a sound Latin American policy.

Strohm is president of the Pan American Council of Chicago.

LEND-LEASE, WEAPON FOR VICTORY, by Edward R. Stettinius, Jr., 358 pages published by the Macmillan Co.

A readable and valuable account of the lend-lease program, which has done more than anything else to integrate the will-to-victory of the United Nations. Ed Stettinius formerly headed lend-lease, is now under secretary of state. He was chairman of the board of U. S. Steel Corporation before being drafted into the government.

It may be literally true, as Senator George said, that, "The date of the signing of the Lend-Lease bill was the day on which the Axis powers were defeated." At any rate, the United Nations have been able to take the offensive since lend-lease was brought into being, and this vast two-way movement of goods — everything from tanks to soup powders — is the cement that holds them together. Lend-lease also played its part in the superb achievements of the Russian army.

The book is must reading to anybody who would be informed on this subject.

IN THE MARKETS

• **MARGARINE PRODUCTION.** Tentative allocations of fats and oils for the year 1944, announced by the War Food Administration in early February, contemplate a production for all purposes of about 770 million pounds of margarine (actual weight) during the year, an increase of over 150 million pounds from the 1943 output of 614 million pounds. Production for lend-lease shipments and commercial exports would be increased to approximately 190 million pounds, about 80 million pounds more than in 1943. Output for civilian consumption would be about 580 million pounds, roughly 75 million pounds more than civilian disappearance in 1943. This increase would more than offset the expected decline in the supply of butter available to civilians in 1944. Total civilian supplies of butter and margarine probably will be smaller in the first half of 1944 than a year earlier when consumption was comparatively high, but may be somewhat greater in the second half of the year than in the second half of 1943.

• **FEBRUARY INSPECTIONS.** Inspected receipts of soybeans in February showed an increase over those for January, with continued improvement in quality. February inspections totaled 3,475 cars compared with 3,133 cars in January. Inspected receipts for October-February this season were 65,030 cars compared with 43,040 cars for the same period the previous year.

The quality of the soybeans inspected in February was somewhat higher than in January, 87 percent grading No. 2 or better in February compared with 74 percent the preceding month. Thirteen percent fell in the lower grades in February compared with 26 percent in January. Eighty-six percent graded No. 2 or better October through February this season compared with 37 percent for the corresponding months last year.

Inspections of soybeans in February include truck receipts equivalent to about 25 cars.

• **PRODUCTION OF FATS AND OILS.** A preliminary estimate of total production of fats and oils from domestic materials in calendar year 1943, based on reported factory production during the year and a provisional estimate of the output of farm butter and noninspected lard, places the total at 10,870 million pounds. Present indications point to a production of approximately 11,200 million pounds of fats and oils from domestic materials in 1944, an increase of about 3 percent over 1943.

The leading changes in production of fats and oils in 1943 were increases of about 600 million pounds in lard output and 450 million pounds in the production of soybean oil, and a decrease of 100 million pounds in the output of inedible tallow and greases. The output of soybean oil, at 1,226 million pounds, was 31 percent greater than in 1942, the previous peak year.

• **SOYBEAN CRUSH.** Crushings of soybeans from October 1943 to January 1944 totaled approximately 44 million bushels compared with about 37 million bushels a year earlier. The yield of oil per bushel of soybeans crushed, however, was only 8.5 pounds compared with 9.1 pounds in October-January 1942-43 and 9.0 pounds in the full 1942-43 marketing year (October-September). The output of soybean oil in October to January of the present season was 372 million pounds, up 9 percent from the 342 million pounds produced in the corresponding months of the 1942-43 season. If the yield of oil per bushel of soybeans crushed continues at a level around 0.5 pound less than last season, the output of soybean oil from the 1943 crop of beans may not differ greatly from the 1.2 billion pounds produced from the 1942 crop, despite the moderately increased crush expected in 1943-44.

• **WAR FOOD ADMINISTRATION PURCHASES.** For Lend-Lease, territorial emergency, Red Cross and other purposes, in pounds. Report of agricultural commodities delivered at shipside during January. For export under the lend-lease act.

Fats & Oils: Margarine, 7,961,951 lbs.; shortening, 1,331,940 lbs.; vegetable oil, 17,102,997 lbs.

Soya Products: Soya beans, 3,129,600 lbs.; soya flour and grits, 15,-167,750; canned soups, 471,295 lbs.; dehydrated soups, 40,875 lbs.; Dry soup powders, 2,367,413 lbs.

Territorial Emergency Program (Hawaii): Soybean meal, 802,200 lbs.

• **STANDARD SHORTENING SHIPMENTS.** By members of Institute of Shortening Mfgrs., Inc.

Week ending March 11, lbs.	5,457,627
Week ending March 18	6,355,808
Week ending March 25	5,906,442
Week ending April 1	7,356,245

• **STOCKS.** War Food Administration reported March 14, 15,681,610 bu. soybeans in commercial storage compared with 3,467,000 bu. a year ago; March 21, 14,556,878 bu. compared with 3,570,000; March 28, 13,-587,753 bu. compared with 3,376,000; and April 4, 12,788,819 bu. compared with 3,187,000 same date a year ago. Approximately 44.0% of the available commercial storage was filled April 1, 1944 compared with 47.5% March 1, 1944 and 65.9% April 1, 1943.

GOVERNMENT ORDERS

• **OIL MEAL PRICE INCREASE.** An increase of $3 per ton has been granted processors of a special type of high protein soybean oil meal used in the manufacture of vital adhesives, the Office of Price Administration announces.

This increase, effective April 8, 1944, raises the price of this product from $42 to $45 a ton, f.o.b. Decatur, Ill.

The higher price is necessary to increase production of this commodity and permit a reasonable processing margin to the manufacturer, OPA stated. The price of adhesives manufactured from the soybean oil meal will not require any advance, because the increase in cost will be absorbed by the manufacturer of this product.

There is a relatively small amount of this type of soybean product

being processed at this time. However, demand has recently arisen for about 25,000 tons of the product for the manufacture of adhesives to be used in the plywood and paper container industry.

This industry produces containers for munitions and the adhesive made from this high protein soybean oil meal is considered necessary and essential for the war effort.

There are two types of this product: One produced by a solvent process and the other produced by a low temperature hydraulic process. Neither of these products is suitable for livestock feed, and the processing methods used are more costly than those used for livestock feed.

● **PRINTING INKS.** The War Food Administration has issued a statement to explain why restrictions recently were removed on the use of fats and oils in the manufacture of printing inks.

For more than a year, 43 of the Nation's printing ink manufacturers — those using more than 10,000 pounds of fats and oils per calendar quarter — have been limited by Food Distribution Order No. 42 to 90 percent of the average quality they used in 1940 and 1941. Recently, however, other restrictions — in the use of paper, for instance — automatically have restricted the use of ink to less than 90 percent. Too, total use of fats and oils by the printing ink industry is comparatively small.

● **OILS ALLOCATION.** WFA has authorized the use of 11,371 tank cars (60,000 pound capacity) of edible oils — cottonseed, peanut, soybean and corn — by refiners, and shortening and margarine manufacturers during April, May and June. Edible oils are regulated under Food Distribution Order No. 29.

In the edible group, the quarterly allocation includes 4,722 tank cars of cottonseed oil; 301 tank cars of peanut oil; 5,378 tank cars of soybean oil; and 970 tank cars of corn oil.

Their use is divided as follows: 1. For the manufacture of edible finished products for civilian use under quotas prescribed in Food Distribution Order No. 42 — 10,312 cars. 2. For the Army, Navy, Marine Corps, War Shipping Administration, Allies and WFA purchases — 879 cars. 3. For industrial users — 180 cars.

● **OILS IN PAINTS.** Use of cottonseed, peanut, soybean and corn oils (or their fatty acids) in the manufacture of products for thinning or reducing paints, varnishes, lacquers and other protective coatings is prohibited by amendment 6 to Food Distribution Order No. 29 issued by the War Food Administration, effective March 27, 1944.

The four oils are principal raw materials for the manufacture of margarine, shortening and cooking and salad oils. They already have been denied for use in paints, varnishes and lacquers.

● **CRUDE EDIBLE OILS.** The War Food Administration has authorized a continuance through June 30, of the suspension of restrictions on delivery of crude cottonseed, peanut, soybean and corn oils to refiners for refining.

Authorizations for delivery of crude oil to users, other than refiners, still must be obtained from the WFA's Office of Distribution, and regulations (under Food Distribution Order No. 29) with reference to use of the four oils, or the shipment of refined oil by refiners and margarine and shortening manufacturers, remain the same.